Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
Amendment of Part 90 of the Commission's	)	
Rules to Provide for Flexible Use of the	)	
896-901 MHz and 935-940 MHz Bands Allotted	)	WT Docket No. 05-62
to the Business and Industrial Land	)	
Transportation Pool	)	
	)	
Opposition and Petitions for	)	DA 04-3013
Reconsideration of 900 MHz Band Freeze Notice	)	

JOINT COMMENTS

Association of American Railroads
American Petroleum Institute
MRFAC, Inc.
National Association of Manufacturers
United Telecom Council

May 18, 2005

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Summary

In these Joint Comments, the Association of American Railroads, American Petroleum Institute, MRFAC, National Association of Manufacturers, and United Telecom Council offer recommended alternatives and modifications to the Commission's proposals in order to better address the spectrum needs of incumbent users of the 900 MHz business and industrial/land transportation ("B/ILT") channels.

The Joint Parties believe that the Commission's *Notice* gives insufficient consideration to the spectrum needs of incumbent B/ILT users and is skewed in favor of commercial operations and spectrum auctions. If adopted, the Commission's proposals would strand existing B/ILT systems at their existing capacity levels and service areas despite the expansion needs of many licensees to better address mission critical and Homeland Security applications.

To minimize this impact, the Joint Parties recommend that the Commission retain the existing site-based licensing policies for ninety-nine B/ILT channel pairs to enable opportunities for incumbent and new private wireless entities to acquire additional channels. In addition, the Joint Parties recommend that the FCC amend its grandfathering proposals to provide incumbents with additional flexibility to modify facilities provided that the incumbent's 22 dBµV/m interference contour is not extended. This would be consistent with past precedent and the rules adopted for the 800 MHz band.

The Joint Parties also urge the FCC to adopt the same interference protection criteria that it recently imposed in the 800 MHz band to mitigate the likely occurrence of interference between incumbent systems and commercial cellular networks. There is every reason to believe that incumbent 900 MHz receivers will be susceptible to this type of interference and should be protected by cellular licensees who deploy such systems despite knowing the risks posed to their spectrum neighbors.

The 900 MHz band is an important resource for sophisticated mission critical communications systems that serve the public interest well. While the FCC should always investigate ways to improve the efficient use of spectrum, it must consider the spectrum needs of all users and radio services. The Commission can better balance the divergent needs of commercial operators and incumbent private wireless users by adopting the recommendations offered herein.

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JOINT COMMENTS

The Association of American Railroads ("AAR"), American Petroleum Institute ("API"), MRFAC, Inc. ("MRFAC"), National Association of Manufacturers ("NAM") and United Telecom Council ("UTC"), hereinafter the "Joint Parties" or "Parties," submit these comments to respond to the FCC's *Notice of Proposed Rulemaking* in the above-captioned proceeding.[1] In these comments, the Joint Parties offer recommended alternatives and modifications to Commission proposals in order to better address the spectrum needs of incumbent users of the 900 MHz business and industrial/land transportation channels.

[1] Amendment of Part 90 of the Commission's Rules to Provide for Flexible Use of the 896-901 MHz and 935-940 MHz Bands Allotted to the Business and Industrial Land Transportation Pool, WT Docket No. 05-62, 70 FR 21781(2005) (*Notice* or *NPRM*).

I. INTRODUCTION.

The 896-901/935-940 MHz ("900 MHz") band is comprised of 399 channel pairs.[2] Two hundred are allotted for commercial SMR use with geographic area licenses already auctioned.[3] The remaining 199 channel pairs are now allotted for the private internal communications needs of business, industrial and land transportation (B/ILT) entities and are the subject of the instant *Notice*. While the Commission now allows commercial wireless services to be conducted on these channels, commercial mobile radio service (CMRS) applicants have not been permitted to apply directly for these channels.

Although the B/ILT channels are well utilized in the major metropolitan areas, large numbers of channels remain unlicensed in lower tier markets and rural areas. In order to "provide greater flexibility in deploying the spectrum to respond to evolving market demands,"[4] the *Notice* proposes to remove existing restrictions and allow any use of the B/ILT channels that is consistent with the fixed and mobile allocation of the band.[5] The Commission further proposes to license the remaining spectrum using a geographic area licensing scheme and competitive bidding.[6] The Commission would grandfather incumbent users at their present locations but any future modifications to those facilities would need to ensure that the existing coverage contours were not extended.[7]

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2 47 C.F.R. § 90.613 of the FCC's Rules.

3 47 C.F.R. § 90.617(d) of the FCC's Rules.

4 *Notice* at ¶ 1.

5 *Id.*

6 *Id.*

7 *Id.* at ¶36.

Each member organization of the Joint Parties represents the existing users of the 900 MHz B/ILT channels and therefore has an interest in this proceeding as its outcome will directly affects the core business of our members. As further described below, the Joint Parties believe that the Commission's *Notice* gives insufficient consideration to the spectrum needs of incumbent B/ILT users and is skewed excessively in favor of commercial operations and spectrum auctions. If adopted, the Commission's proposals would strand existing B/ILT systems at their existing capacity levels and service areas despite the expansion needs of many licensees to better address mission critical and Homeland Security applications.

To minimize this effect, the Joint Parties therefore recommend that the Commission retain the existing site-based licensing policies for 99 B/ILT channel pairs to enable some opportunity for incumbent and new private wireless entities to acquire additional channels. In addition, the Joint Parties recommend that the FCC amend its grandfathering proposals to allow modifications that do not extend the incumbent's 22 dBµV/m interference contour. This will allow incumbents greater flexibility to adjust their existing coverage and is consistent with similar policies adopted for the 800 MHz band.

The Joint Parties also urge the FCC to adopt the same interference protection criteria that it recently imposed in the 800 MHz band to mitigate the likely occurrence of interference between incumbent systems and commercial cellular networks. There is every reason to believe that incumbent 900 MHz receivers will be susceptible to this type of interference and should be protected by cellular licensees who deploy such systems despite knowing the risks posed to their spectrum neighbors. In this case, the FCC's

"interfering party fixes it" policy should clearly apply. Finally, the Joint Parties offer their additional recommendations for operational and licensing issues raised in the *Notice.*

Private internal communications systems operated by Critical Infrastructure Industries ("CII") and mission critical industrial and land transportation entities serve the public interest as they help these organizations run more efficiently while often assisting and coordinating with public safety organizations to protect lives and property. The complete loss of the 900 MHz band for these purposes would be a devastating blow as there are simply no alternative frequency homes that can be consistently relied upon to provide the capacity and coverage needed by these organizations. The Commission can better balance the needs of multiple services by adopting the recommendation contained in these comments.

II. THE 896-901/935-940 MHZ BAND SUPPORTS VALUABLE PUBLIC SAFETY, CRITICAL INFRASTRUCTURE, AND INDUSTRIAL COMMUNICATIONS.

In proposing to reallocate the 900 MHz B/ILT channels for commercial use with future licensing achieved by auctioning wide geographic area licenses, the Commission states that its actions "strike a fair and equitable balance between the interests of incumbent B/ILT licensees and those seeking to provide geographic area service."[8] The Joint Parties respectfully disagree with this tentative conclusion as the *Notice* appears to offer little, if any, consideration for the needs of the incumbent licensees. For example, the *Notice* gives no consideration to the possibility that incumbents may need to expand system capacity or coverage area and how the introduction of wide area licensing will

[8] *Notice* at ¶ 4.

impact those needs. To the contrary, the Commission instead seeks comment on how the existence of the incumbents will affect the deployment of new wide area commercial systems.[9] Simply put, the *Notice* tacitly assumes that the public interest is inherently best served by allocating spectrum for cellphones and utilizing spectrum auctions, at the expense of incumbent systems that are vital to the provision of basic goods and services to the public.

In proposing to reallocate the 900 MHz B/ILT channels, the *Notice* did not provide any analysis of the needs of the incumbent users and whether spectrum options remain to satisfy their future needs. Nor did it consider the public interest benefits that are derived from incumbent systems. Rather, in its "State of the Industry" discussion describing the current use of the 900 MHz band, the *Notice* focused solely on numbers, *i.e.* the number of licensees in the band, the number of licensed transmitter sites, and the geographic distribution of those sites across the country.[10] Nowhere does the *Notice* consider the fact that many of those sites support mission critical applications necessary to protect lives and property as described over the next several pages.

***Utilities Use of 900* MHz:** The 900 MHz B/ILT channels are home to a considerable number of systems supporting critical infrastructure industries such as public utilities. UTC has identified approximately 100 utilities and related companies operating mission-critical wireless systems on the 900 MHz B/ILT frequencies. Many of these entities upgraded to this band due to the congestion – and thus, potential for harmful interference – in the shared 150-512 MHz bands, or because no 800 MHz private

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9 *Id.* at ¶ 35.

10 *Id.* at ¶ 10.

wireless spectrum was left available for their use in their service territories. To cut off access to these frequencies for necessary future growth would leave these critical infrastructure entities without recourse for vital safety-related land mobile communications, an unacceptable outcome.

Of the approximately 100 identified licensees, a sampling of seven gas and electric utilities provides some additional information about typical systems. These seven systems operate in states from the East to West Coasts of the U.S., and from the upper Midwest to the Gulf of Mexico. The seven specific networks alone – by no means the largest among utilities – reported total capital expenditure on their 900 MHz systems of more than $160 million, not including all maintenance and upgrade costs. The seven systems use several hundred frequency pairs across their service areas, which can be urban, suburban or rural. One system alone operates across more than 100 base station locations to cover some 88,000 square miles of territory.

Utilities use 900 MHz systems for more than voice dispatch communications, as important as that function is to their operations. Systems increasingly are used to provide mobile data – via laptops and handheld devices – to field crews, such as automated ticket data transfer to coordinate field services with office operations. In addition, more than one of the seven utilities use their 900 MHz systems for crucial electric power and gas control systems, including Supervisory Control and Data Acquisition (SCADA) applications. Uses include: plant security, environmental alarms at nuclear plants, power flow parameters, breaker status monitoring and bus voltages, among others. As the means of control over generation (including nuclear power), transmission lines and electric and gas distribution networks, 900 MHz systems have become vital to these

utilities. And, as their core service infrastructures necessarily grow to serve new customers in new areas, these systems must be allowed to grow, as well.

Beyond their status as public safety radio systems,[11] utilities' 900 MHz communications systems also serve traditional public safety entities and other emergency response personnel. Several utilities provide municipal agency use of their systems, as well as use by other entities such as the American Red Cross, local military installations, both ground and air ambulance services, school districts, etc. Such entities are attracted by the ultra-reliable and full-coverage communications infrastructure built by CII entities, especially when their own resources cannot stretch to the upgraded radio systems they need.

***Land Transportation Use of 900* MHz:** The *Notice* also does not consider that six 900 MHz channels are used by the railroad industry throughout the U.S. for mission-critical train operations and train control pursuant to the Commission's 1988 decision to set aside those six channels for Advanced Train Control System ("ATSC").[12] In 2001, the Commission converted over 300 site-specific ATCS licenses held by AAR, covering over 1,000 base stations, into a single geographic-area "ribbon" license (Call Sign WPSF894), which, for all practical purposes, is nationwide in scope.[13] In fact, these

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11 *See* 47 U.S.C. § 309(j)(2).

12 In Re Use of Six Conventional 900 MHz Frequency Pairs for an Advanced Train Control System, *Order*, 3 FCC Rcd 427 (1988).

13 In Re Petition of AAR for Modification of Licenses for Use in Advanced Train Control Systems and Positive Train Control Systems, *Order*, DA 01-359, 16 FCC Rcd 3078 (2001).

same 6 channels are also allocated for the same purpose by the government of Canada.[14] Any co-channel geographic-area licenses for CMRS providers would be fundamentally incompatible and irreconcilable with the railroad's existing geographic-area license.

Similarly, the airlines have acquired 900 MHz licenses to support the following types of "Homeland Security" applications: (1) sterile area control, which ensures that all individuals entering secure airport areas have "passed through the appropriate metal detector checkpoints," (2) positive bag match, which is used to confirm that all baggage on a plane is associated with a passenger aboard the aircraft, and (3) special passenger (*i.e.*, VIP and prisoner) movement, which often requires special security details and plane-side vehicle access.[15]

***Manufacturers and Industrial Uses of 900* MHz:** US manufacturers also rely extensively on 900 MHz facilities as evidenced by a few examples:

- Caterpillar, Inc. has more than $ 1.5 million invested in trunked 900 MHz radios with over 1,000 units in several of its Illinois plants. These radio systems are used for the complete range of Caterpillar's specialized communications needs including just-in-time delivery, materials handling with bar-code reader-equipped forklifts, robotic devices on the assembly line, security, medical, and plant maintenance.
- Raytheon Corporation has invested $2.25 million in a 900 MHz system for its Tucson plant. This facility, which employs 10,000 people, supports 1,000 radios used for variously for security, fire, transportation, production, and maintenance. This system will be expanded and upgraded in the next five years so as to provide a more robust, digital communications capability compliant with Project 25 standards.

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[14] *See* Arrangement Between the Department of Communications of Canada and the Federal Communications Commission of the United States of America Concerning the Use and the Bands 896 to 901 MHz and 935 to 940 MHz, September 17, 1990; in particular, *see* Section 2.1(c) concerning use of the same six channels in the U.S. and Canada for implementation of an Advanced Train Control System.

[15] *See* ULS File No. 0001214365, Attachment at 4-5.

- Lockheed Martin Corporation has invested $3.5 million in 900 MHz technology and will require more 900 MHz spectrum as its plants in Southern California and Texas expand and are re-configured. Lockheed's systems support 650 radios and provide a wide variety of specialized communications needs. Among other things, the radios are designed to be intrinsically safe in the presence of hazardous vapors. In addition, Lockheed personnel utilize special radios when working in extremely confined spaces such as aircraft wing tanks. As defense contractors, manufacturers like Lockheed, Raytheon, and Boeing are required to ensure that their radio systems are compliant with special government security regulations. Aircraft manufacturers have also made provision with local public safety organizations to communicate via 900 MHz systems in case of emergencies.
- Coors Brewing Co. has over $6 million invested in its 900 MHz facilities that support nearly 1,500 subscriber units and is used for the full range of specialized manufacturing communications needs including, emergency medical and hazmat, communications with employees working alone in isolated spaces, materials handling, and remote control of railroad locomotives and overhead cranes. Moreover, first responders share Coors' system when on the premises since their systems typically cannot penetrate many of the spaces where Coors employees work.
- Weyerhaeuser Corporation has approximately $2 million invested in 900 MHz facilities that are typically used for safety-related communications purposes. These include, for example, the handling of chemicals, enclosed tank entry, firefighting, and emergency medical support, among others. Its system in North Carolina supports a wide variety of functions including automated alarm monitoring and activation. This is a function that continues to grow as manufacturers like Weyerhaeuser look to install additional efficiency-enhancing technologies.

***Petrol-chemical Use of 900 MHz*:** API member companies rely on 900 MHz systems principally in refineries and chemical manufacturing plants.[16] These two-way communication systems support critical operational, security, maintenance and safety-related functions. A typical large refinery operates 365 days a year, 24 hours a day, and employs between 1,000 and 2,000 workers. Refinery-based mobile radio facilities, including these 900 MHz systems, are used to communicate critical operational

[16] Today, there are approximately twenty refineries and chemical manufacturing plants using 900 MHz systems.

instructions from unit control rooms to personnel responsible for task execution.[17] In large refineries, there may be dozens of these production units, each responsible for one or more steps in the complex process of refining and producing multiple products, including jet fuel, gasoline and home heating oil. The secure and reliable transmission of these instructions ordinarily insures incident-free operations. There can be "upsets" from time to time, however; and, when there is a mishap, reliable two-way communications are essential to immediately respond to potentially dangerous situations and return the process to normal operation.

These 900 MHz systems are also used extensively in the transportation of refined products. This includes communications with railroad crews operating inside refineries, personnel at truck racks, and those employees responsible for operating multiple pipelines that transport various products from every refinery.

Clearly, there are significant public safety functions associated with 900 MHz refinery systems. Due to a typical refinery's large size and often close proximity to hundreds of thousands of neighboring citizens, operators are acutely aware of their duty to protect the public's safety. Prompt emergency response to any incident that may occur limits the extent of injuries to workers and the surrounding communities, and it keeps facility damages to a minimum. Effective communications are essential for rescue and emergency response teams to provide immediate assistance in the event of a serious incident. For example, if an explosion does occur, the ability to quickly initiate and communicate the facility's emergency response plan can reduce or eliminate injuries.

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[17] As older refineries and plants modernize their infrastructure, many will look to replace mobile communications systems. The continued availability of 900 MHz frequencies for site licensing will be therefore become increasingly important.

Most refineries' 900 MHz systems have a dedicated "emergency response" channel that allows messages to be quickly disseminated plant-wide.

***Public Safety Use of 900* MHz:** Despite the FCC's apparent concurrence with Nextel's characterization that there is no public safety activity in the 900 MHz band, many licensees provide service to public safety (first responders such as ambulances) and governmental entities (school districts, municipalities, etc.) that cannot afford to purchase, construct and operate their own systems. In comments recently filed with the Commission, the Enterprise Wireless Alliance ("EWA") described how one St. Louis, Missouri operator, for example, has several hundred first responder and commercial ambulance units on its 900 MHz trunked system.[18] EWA further stated that a number of its other members provide the primary communications service for ambulance companies; some serve water control districts, medical facilities, jails, transportation departments, schools and virtually every other type of governmental and quasigovernmental institution.

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Clearly, the 900 MHz B/ILT channels support critical communications networks. Furthermore, the 900 MHz channels are used effectively and efficiently. An analysis of the 900 MHz B/ILT channels shows that in 15 out of the top 20 BEA markets, there is at most only one channel pair out of 199 unassigned.[19] Spectrum scarcity currently exists in smaller markets as well such as Phoenix, San Jose, Sacramento, Providence, Salt Lake

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[18] Comments of the Enterprise Wireless Alliance, WT Docket No. 05-157, submitted April 28, 2005.

[19] More specifically, within the top 20 BEA markets, there are 12 markets with zero unassigned channels and 3 markets with only a single channel pair unassigned.

City, Bridgeport, Orlando, and Austin. Note that this analysis does not include consideration of the hundreds of applications filed by Nextel's subsidiary ACI 900, Inc. in violation of the FCC's application rules that are inexplicably still pending in the Commission's data base.

In sum, the 900 MHz B/ILT allocation supports mission critical communications systems necessary to assist with Homeland Security efforts across the country. B/ILT licensees work cooperatively with federal, state, and local first responders regarding every type of public safety issue. The Commission must consider this fact when crafting rules for the future licensing of the band. In fact, the Joint Parties believe that such consideration must take precedence over the Commission's administrative convenience in issuing licenses or Nextel's business plans.

III. INTERFERENCE ISSUES.

The *Notice* proposes to protect incumbent systems by either: 1) requiring geographic area licensees to locate their stations at least 70 miles from any incumbent facility, 2) complying with the Commission's "short-spacing" requirements, or 3) negotiating shorter separations with the incumbent licensees.[20] While tentatively concluding that this proposal would adequately protect incumbent operations, the Commission seeks further comment on whether the application of these separation requirements "would hamper the geographic area licensee's ability to fully construct its systems."[21]

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20 *Notice* at ¶34.

21 *Id.* ¶35.

The *Notice* also asks commenters to consider whether additional interference protection requirements are necessary.[22] In particular, the Commission notes that the architecture of incumbent 900 MHz systems may be significantly different than new entrant architectures, which could lead to interference mechanisms that are not fully addressed by the co-channel spacing requirements.[23] In this regard, the Commission therefore asks whether the overall approach to interference protection should be modified to include the interference abatement reached in the 800 MHz Report and Order or an enhanced or voluntary "Best Practices" approach to address potential interference in the band. Alternatively, the Commission questions "whether the appropriate interference avoidance mechanisms are best left to private arrangements and negotiations between licensees."[24]

As already shown, the 900 MHz B/ILT channels are used to support public safety applications, critical infrastructure industries networks that protect life and property during times of emergencies as well as business and industrial systems that help fuel our nation's economy and create jobs. It is therefore imperative that the Commission take all steps necessary to ensure that, regardless of what rule changes it adopts in this proceeding, incumbents are adequately protected from interference caused by new entrants.

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22 *Id.*

23 *Id.*

24 *Id.*

This point should be beyond dispute but the Parties are instead compelled to respond to the Commission's request for comments on whether the standard co-channel separation requirements would "hamper" the ability of geographic area licensees to construct their systems. Of course they do: in fact, the business and industrial channels are already heavily occupied in the major metropolitan areas and would preclude commercial use of those channels in those markets regardless of an auction. But to reduce the required separation to provide geographic area licensees with greater flexibility will result in unacceptable interference to critical communications networks. In its *Notice*, the Commission is proposing to continue treating incumbent business and industrial systems as primary services so it is therefore obligated to adopt appropriate interference protection criteria. As further described below, the Commission should be more concerned with increasing interference protection as recent history clearly demonstrates that mixing high-site, high-power private wireless operations in the same band with cellular operations will result in interference. At a minimum, application of the standard separation criteria would at least harmonize the 900 MHz rules with those adopted for similarly situated channels in the 800 MHz band.[25]

Ultimately, the Joint Parties expect that the Commission will indeed adopt co-channel protection for incumbent systems based on established rules and policies. The Parties are deeply concerned, however, that the Commission failed to tentatively conclude that adoption of additional interference abatement policies similar to those adopted in the *800 MHz Report and Order* are needed here. There is every reason to believe that, absent Commission intervention, interference to B/ILT licensees will result

[25] *See* 47 C.F.R. §90.683(a)(1) of the Commission's Rules.

from the deployment of commercial cellular networks in the 900 MHz band by Nextel or any other carrier. This is likely even without an auction but after one, the band is likely to become a repeat of the 800 MHz channel-by-channel interleaving and turn into an interference nightmare for all concerned. The Parties therefore recommend strongly that the FCC adopt similar policies to those adopted for the 800 MHz band, namely that harmful interference is defined as any impairment to the desired signal that causes the C/(I+N) ratio of a voice radio receiver to drop below 20 dB provided that the median power of the desired signal is greater than or equal to -101 dBm for portable units and/or -104 dBm for mobile units.[26] Under those circumstances, commercial systems that deploy incompatible cellular architecture systems in the 900 MHz band should be required to resolve the interference consistent with the obligations adopted in the 800 MHz Report and Order.

Recently, Nextel has argued irresponsibly that the interference abatement policies are unnecessary at 900 MHz.[27] Nextel states that since it began operating its 900 MHz system in 2002, it has not received a single interference complaint from a business or industrial/land transportation licensee.[28] Arguing that the imposition of interference protection standards are "contrary" to the Commission's flexible use proposals, Nextel also argues that 900 MHz business and industrial/land transportation licensees "generally

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[26] *See* Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, and Order, WT Docket No. 02-55, 19 FCC Rcd 14969 at ¶ 107 (2004) ("800 MHz Report and Order").

[27] Opposition and Comments of Nextel Communications, Inc. Regarding Petitions for Reconsideration, WT Docket No. 02-55, April 21, 2005, at 19.

[28] *Id.*

have the resources to deploy robust, interference-resistant systems" unlike 800 MHz public safety licensees.[29]

The Commission should reject Nextel's blatantly self-serving arguments. Nextel states that it has not received any complaints of interference but has provided no information on the extent to which it is utilizing its 900 MHz frequencies in its cellular network. Based on the Parties' collective knowledge of the wireless communications industry, we strongly suspect that Nextel's use of its 900 MHz frequencies remains limited even at this time. Until Nextel provides information on the number of markets that it has integrated 900 MHz channels into its cellular network, as well as the number of transmitter sites and frequencies used within those markets, and the level of occupancy of the 900 MHz channels, it is somewhat meaningless for it to indicate that it has received no complaints of interference.

Furthermore, a minimal number of complaints should not be surprising and is entirely consistent with the interference experience at 800 MHz. As Nextel stated in its original White Paper addressing 800 MHz interference, the Commission began receiving complaints about CMRS to public safety interference in 1999 – some 3 years after the introduction of its iDEN-based cellular system.[30] So even in Nextel's primary band of operation, it took years for users to recognize and identify that the disruptions in their communications was actually interference caused by Nextel and other cellular carriers.

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[29] *Id.* at 20.

[30] *See* Letter from Regina M. Keeney, Counsel To Nextel Communications, Inc. to Magalie Roman Salas, Secretary, FCC, ET Docket No. 00-258, submitted Nov. 21, 2001 (*Nextel White Paper*) at 16.

Nextel's main rationale against supporting equitable interference protection is that there is not a public safety allocation within the 900 MHz band and that the existing business and industrial licensees can afford to modify their systems to accommodate Nextel's incursion into the band. Nextel's assumptions regarding affordability are unsupported. Entities not in the telecommunications business spend what they have to for the reliable communications networks they need, but hardly have excess capital or personnel to upgrade those systems to respond to the unacceptable interference caused by a carrier for which wireless *is* the primary business. Indeed, the opposite would seem to be the more logical assumption.

Also, Commission acceptance of Nextel's position would fly in the face of long-standing FCC policies. One of the overarching principles affecting the licensing of land mobile frequencies available under Part 90 of the FCC's rules is that users are required to cooperate in the selection and use of frequencies to avoid interference.[31] Furthermore, while the Commission has noted that licensees impacted by interference should cooperate in resolving interference problems (as reflected in Section 90.173(b)), it has made clear that the "last in" licensee must bear all of the costs associated with remedying the interference resulting from its operations: "Although the land mobile radio licensees are expected to cooperate with [the interfering party] by offering suggestions to resolve the problem and by implementing a solution to it reasonable in both cost and configuration, there is no doubt that the financial responsibility for eliminating the objectionable interference falls upon the 'newcomer.'"[32] This responsibility exists, even if the costs of

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[31] 47 C.F.R. § 90.173(b) of the Commission's Rules.

[32] Broadcast Corp. of Georgia (WVEU(TV)), 92 FCC 2d 910, ¶ 7 (1982) ("*WVEU II*").

remedying interference problems are substantial and "greatly in excess of that which [the licensee] anticipated."[33] Moreover, these financial and other obligations exist, even if the newcomer licensee is operating within its authorized parameters.[34]

Unlike the 800 MHz band where Nextel has a defensible position that the resultant interference caused by its deployment of a cellular network within a private wireless allocation was unforeseen and therefore unavoidable, it has no such defense here. As it indicated in its recent opposition to 800 MHz petitions for reconsideration, *see* n. 7 *supra*, Nextel initiated 900 MHz cellular service in 2002, a year *after* it had fully documented the nature and cause of the 800 MHz interference scenarios in its White Paper to the FCC. Nextel, in migrating to the 900 MHz band, a band that it had originally chosen to abandon, should bear the consequences of providing full protection to incumbent licensees.

And there should be little doubt that operation of a cellular network within the 900 MHz band will result in interference to 900 MHz licensees operating high-power, high antenna-site interference limited systems. Similar to the 800 MHz environment before rebanding, the 900 MHz auction proposal would fully interleave channels for commercial cellular operations with those used for business and industrial uses. More

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33 *Id*. *See also Jack Straw Memorial Foundation*, 37 FCC 2d 544 at ¶ 7 (requiring a TV station to take corrective action if serious interference problems arise, "even if this will mean relocating to yet another [transmitter] site").

34 *See* Application of WKLX, Inc., 6 FCC Rcd 225, ¶ 10 (1991) (stating that WKLX would be obligated to rectify interference even though "the transmitted signals fully comply with all of our emission standards and requirements"); *WVEU III*, 96 FCC 2d 901 at ¶¶ 2,21 (requiring the newcomer licensee (WVEU) to "reimburse [affected] land mobile radio licensees for their expenses in modifying their facilities to new frequencies" even though WVEU was operating at only "6% of full power" permitted under its license).

importantly, the equipment used by business and industrial/land transportation licensees is similar to 800 MHz radios that have been proven to be susceptible to interference. In this regard, AAR recently informed the FCC that it had performed a comparative analysis of the adjacent channel and intermodulation performance characteristics of radios in the 900 MHz band compared to the 800 MHz band.[35] AAR concluded that the 900 MHz radios did not achieve the same rejection performance at 800 MHz radios. AAR tests therefore imply that interference will be greater at 900 MHz than what was experienced at 800 MHz.

In fact, 900 MHz CII entities report experiencing interference from carriers employing cellular architecture. One utility on the East Coast reports interference at several base stations located within one-half mile of cellular sites. Due to multiple carriers sharing a tower location, it has proved difficult to identify the actual carrier causing the problem. Interference protection standards, coupled with similar resolution and notification requirements to those adopted for 800 MHz, would mitigate this problem. Another utility in the Midwest reports interference at approximately 10 percent of its base station locations, usually due to a cellular carrier's conversion of its sites to digital operations. While problems thus far have been resolved, this process generally requires many hours of personnel time, taking employees away from other work and requiring months before final resolution. Again, interference protection standards and a resolution process would reduce this problem greatly.

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[35] Petition for Reconsideration, filed by AAR, WT Docket No. 02-55, submitted December 17, 2004, at n. 18.

Similar unacceptable interference, from carriers operating on both 800 MHz and 900 MHz, are reported by Gulf-area and Southwestern utilities. These utilities are deeply concerned that the lesser adjacent-channel rejection of 12.5 kHz receivers, compared with 25 kHz equipment in use in the 800 MHz band, will make interference a nearly insurmountable problem should the Commission's proposals be adopted, endangering the lives of crew members engaged in already-hazardous work, as well as the safe operation of electric and gas systems themselves.

Petroleum companies report the same concerns. As producers and transporters of substances that are both highly flammable and potentially toxic, oil and gas companies must be confident about the reliability of the systems they employ. Interference to a system employed to support refinery activities could have devastating consequences if personnel in one area of the plant cannot effectively communicate instructions to other workers because the integrity of their communications facilities has been compromised.

Any problem with a communications system in a refinery complex is potentially dangerous. For example, workers may need to relay a message to "close the valve" in a section of the refinery. If two workers hear the same command, or if there is a communications failure and the message is not properly relayed, there can be significant and dangerous consequences. To ensure safe refinery operations, employees must have the clear and reliable radio communications capabilities that are only provided by secure private two-way radio systems.

In short, commercial cellular operations in the 900 MHz band threaten the imbedded infrastructure investments of an estimated $1 billion by utilities and other critical infrastructure industries, railroads, airlines and other transportation interests and

industrial and business entities. If the Commission pursues this course, fairness and FCC precedent require the establishment of adequate interference protection criteria for incumbents.

IV. THE PUBLIC INTEREST WOULD BE SERVED BY ESTABLISHING AN EQUITABLE SET-ASIDE OF 900 MHZ CHANNELS FOR CONTINUED B/ILT SITE-BASED LICENSING.

The parties already have described the types of incumbents that populate this band and the important uses to which they put this spectrum. The entities that operate private systems tend to be the very largest fleets, as well as those with communications requirements that are not well suited to systems designed primarily to serve consumer traffic. These can include companies that are part of the critical infrastructure industries, large transportation enterprises, including railroads, airlines and trucking companies, manufacturing facilities, shared, multi-channel trunked dispatch systems, and a variety of other entities engaged in activities as broad as the American business community itself.

Communications are critical to the primary business of most of these companies. They cannot operate efficiently or safely, and in some cases, cannot operate at all without access to reliable, geographically appropriate, cost-effective radio systems. Many moved their operations from spectrum below 512 MHz to the 900 MHz band, despite its less desirable propagation characteristics, because the nature of their communications requires exclusive use of their authorized channels.

Exclusive-use spectrum is a rare commodity for private wireless users. Beyond the 900 MHz B/ILT channels, exclusivity is only available in the following bands: 1) on a limited, ad hoc basis in the heavily encumbered bands below 512 MHz, 2) the 470-512 MHz band, which is available in only 13 markets nationwide and has been fully assigned

in those markets for decades, and 3) the 800 MHz band, which is dominated by and susceptible to, interference from Nextel's iDEN network.[36] None of these bands is a viable option now for enterprise and other users with a critical need for channel exclusivity. Therefore, it is vital that such users retain access to some reasonable portion of the 900 MHz band.

The *Notice* did attempt to address this issue by requesting comment on "the option of dedicating the upper four channel blocks…to traditional B/ILT services."[37] It is not entirely clear whether the FCC's proposal was to reserve this spectrum for continued site-based licensing under current eligibility requirements or to establish eligibility restrictions for auction participants that would be applicable to some designated portion of 900 MHz spectrum.

The Joint Parties strongly recommend the first option. The Commission is aware of the legal, operational and economic limitations that make acquiring spectrum by competitive bidding an unrealistic alternative (or in some cases, statutorily not required) for many of the user categories that currently inhabit this band.[38] A set-aside for auction

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[36] Moreover, the 800 MHz band offers no opportunity for growth, at least for this class of licensees. Nextel's license holdings, combined with other 800 MHz users, have made it impossible to acquire additional 800 MHz channels in all but the most rural markets for many years. When Nextel relinquishes spectrum as part of the 800 MHz band reconfiguration proceeding sometime over the next several years, the spectrum it surrenders will be reserved for use by public safety entities for three years and, thereafter, for public safety and critical infrastructure industries for an additional two years. Only then will the recovered spectrum be made available for the remaining classes of private users. It is not likely that even entities that qualify as critical infrastructure industries will see much spectrum relief by the time they can access the band. Other eligible users should expect none at all.

[37] *Notice* at ¶ 30.

[38] *See e.g.,* 47 U.S.C. § 309(j)(2). In addition, municipalities generally are prohibited by state law from such activity, while industries regulated by state

purposes would not address these issues. Moreover, unless the Commission also intends to adopt a meaningful holding period before the winners of set-aside auction channels would be permitted to assign authorizations to an entity that was ineligible to participate, it will have accomplished nothing except the enrichment of the auction winner.

The better approach, and the one that the Joint Parties hope was contemplated by the FCC, would be to reserve a reasonable amount of 900 MHz spectrum for traditional B/ILT users with continued site-based licensing rights. Specifically, the parties recommend that the FCC designate 100 of the 199 available B/ILT channels for auctioned, geographic licenses and retain 99 channels for site-based authorizations.[39] This would provide some system expansion opportunities for incumbent licensees as well as a home for eligible entities that may require 900 MHz spectrum in the future. It would represent, in the FCC's words, "a fair and equitable balance between the interests of incumbent B/ILT licensees, and those seeking to provide geographic area service."[40] Licensees that qualify for the reserved channels still would be permitted to convert their authorizations to commercial status, however, their spectrum rights would continue to be site-based, not an authority to operate throughout a geographic area.

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commissions would be hard-pressed to justify large, uncertain capital expenditures that would have to be passed on to ratepayers.

[39] The *Notice* suggested a set-aside at the upper end of the 900 MHz band. The parties have reviewed the Commission's licensing records carefully and have found no discernible licensing pattern that would dictate which channels would be best suited for the B/ILT reserve. There appears to be a random distribution of user activity throughout the available channels. Therefore, they express no preference as to which particular 99 channels are set-aside for continued site-based licensing and recommend that the choice be left to the FCC.

[40] *Notice* at ¶ 4.

Ninety-nine channels for continued B/ILT licensing would reduce the existing allotment of spectrum by approximately 50 percent but would still provide a usable quantity of "white space" for new operations in less densely populated areas. This is the "last stand" for private wireless users – there are no other viable spectrum alternatives for mission critical communications systems given the current levels of congestion in other bands allotted for such use. While the Joint Parties readily admit that it is difficult to forecast future needs, it is preferable to be initially conservative than to underestimate demand.[41]

The parties also support the FCC's tentative conclusion that the loading requirements currently applicable to 900 MHz B/ILT applicants be eliminated.[42] Those rules require applicants to justify the number of channels requested based on the number of mobile units they certify will be placed in operation on the system within a defined period. The FCC, of course, has the right to investigate an applicant's candor and its qualifications to hold any FCC license if a question is raised at the application stage whether the claimed mobile count represents "paper loading." However, once the license is approved, a failure to place the identified number of units in operation is not a basis for superceding the license to reflect a smaller number of frequencies. Thus, the 900 MHz loading requirement has lost much of its significance. Moreover, since B/ILT incumbents now are permitted to convert their authorizations to commercial status in

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41 Ninety-nine channels is also the number of channels that are not contaminated by the speculative applications submitted by ACI 900, Inc., a Nextel subsidiary, many of which remain pending and preclusive of other uses of the 900 MHz business pool channels. ACI 900 applied for business pool channels only as it was apparently unable to satisfy the eligibility restrictions associated with the industrial/land transportation pool channels.

42 *Notice* at ¶ 52.

accordance with the 800 MHz Order, and thereby become exempt from any loading requirement, retention of that rule is impractical.

However, eliminating all loading requirements could be an invitation for frequency hoarding and/or speculation in channels for the purpose of sale to a third party. For this reason alone, it would not be prudent spectrum management to allow an applicant to secure all remaining B/ILT channels in a given area at one time. Therefore, the parties recommend an approach that has worked effectively in the bands below 512 MHz. Specifically, the Commission should adopt a rule analogous to FCC Rule Section 90.187(e).[43] Applicants should be permitted to request up to 10 channels at a time at sites within the service area defined by the proposed transmitter location if it is a single site request.[44] If multiple sites are designated on an application, all sites with overlapping services areas would be defined as a "single transmitter location" for purposes of the 10-channel limitation. Sites without overlapping service areas on a single application would be treated as distinct "single transmitter locations," each of which would be subject to the rule. As permitted in the lower bands, a licensee should be able to acquire up to 10 additional channels upon certification to the frequency coordinator that all already authorized channels within the service area have been placed in operation.

V. AUCTION ISSUES.

The Commission also has requested comment on various issues relating to the auction process itself and the treatment of incumbents in the post-auction environment. While the parties generally support use of the competitive bidding rules set out in Part 1,

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[43] 47 C.F.R. § 90.187(e).

[44] For the reasons described in Section V *infra,* that service area should be defined as the licensee's 22 dBμ/V contour.

Subpart Q of the FCC Rules,[45] it appears that a number of the proposals in the NPRM were engrafted from the rules used in the 1995/6 Auction No 7 in which the FCC auctioned geographic rights to 900 MHz SMR spectrum. That was one of the earliest FCC auctions. In the ten years and numerous competitive bidding proceedings since then, the FCC has improved many of its procedures and policies. It also has recognized that each auction must be carefully tailored to ensure, among other results, "economic opportunity and competition…by avoiding excessive concentration of licenses and by disseminating licenses among a wide variety of applicants…."[46] The parties believe that the following recommendations will help produce a result consistent with that statutory mandate.

A. Size of Geographic Service Area.

The *Notice* tentatively concluded that using Major Economic Areas (MEAs), the approximate equivalent of the Major Trading Areas (MTAs) used in the original 900 MHz SMR auction, would "…increase spectrum efficiency, provide better quality service to end users, and allow service to reach potential end users that may otherwise be without adequate communications options."[47] The parties respectfully disagree with the FCC's conclusion.

It is uncertain whether the use of MTAs helped achieve all those results even in the 900 MHz SMR auction. In particular, it is questionable whether it promoted the provision of service in more rural areas that have few communications alternatives. More

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45 47 C.F.R. §§ 1.2101-1.2113.

46 47 U.S.C. § 309(j)(3)(B).

47 *Notice* at ¶ 23.

importantly, however, by assuming that those results invariably define the public interest, the Commission has failed to take into account the valuable services provided by the B/ILT incumbents within the band, services that unquestionably advance the public interest in their own right. The provision of utility, transportation, manufacturing, and other vital services also provide important benefits to the public at large. Entities engaged in those activities are highly unlikely to participate in this auction, as explained above. Beyond Nextel, most likely participants are small businesses that do not have a meaningful ability to bid successfully in an auction of large geographic areas such as MEAs. With only the rare exception, they operate in areas much smaller than MEAs and would be unable to justify acquiring spectrum in markets outside of reasonable business plans. To the extent that they purchased an MEA license to secure spectrum in the area needed (an unlikely scenario), there is no assurance that the spectrum would be used productively outside those markets, a result contrary to sound spectrum management principles.

Instead, the Joint Parties recommend that the Commission use the more common Basic Economic Areas (BEAs) as the geographic standard for a 900 MHz B/ILT spectrum auction. They have been used in numerous, successful FCC auctions in the past 10 years, indeed much more frequently than MEAs, which typically have been reserved for auctions of large, unencumbered spectrum blocks intended solely for advanced technology Commercial Mobile Radio Service use. The use of smaller BEAs will create at least the opportunity for a broader dissemination of licenses without denying entities with larger geographic ambitions the right to assemble multiple BEAs into whatever geographic coverage is required. Nextel's great success in all 800 MHz auctions – the

carrier purchased 90 percent of all licenses in the auction of the "upper 200" 800 MHz channels – is clear evidence that use of BEAs is not a deterrent to its participation.

B. Channel Block Size.

The *Notice* proposes to license the 199 channels in this spectrum block in 19 blocks of 10 contiguous channels and 1 block of 9 contiguous channels. The parties support the channel block size with the proviso that the Commission set-aside an equitable portion of the band for continued site-based B/ILT licensing as detailed in Section IV *supra*. The parties also agree with the *Notice's* conclusion that applicants should be permitted to acquire as many of those blocks as they wish, both during and after the auction.

C. Bidding Credits.

The parties do not agree with the bidding credits proposed in the *Notice* which, again, appear to have been taken from the original 900 MHz SMR auction and are significantly smaller than those used in most auctions over the past ten years. The *Notice* proposes that small businesses, those with average revenues over the last 3 years of less than $15 million, would get a 10 percent bidding credit. Very small businesses with revenues of less than $3 million would receive a 15 percent bidding credit.[48]

By contrast, in virtually all recent auctions, small businesses have received 25% bidding credits and very small businesses have been granted 35% credits. These higher levels may be related to the FCC's decision to eliminate installment payments for qualified entities, a small business option that was available in the original 900 MHz SMR auction. The *Notice* does not offer any rationale for using substantially smaller

[48] *Notice* at ¶ 61.

bidding credits in this auction. They should be increased to the 25 percent and 35 percent levels that have become standard in auctions of this type.

D. Action on Pending 900 MHz Applications.

As described in the *Notice*, the Commission issued a Public Notice freezing acceptance of application for new 900 MHz systems in September 2004.[49] The rationale for the freeze was the "exceptionally large number of applications for 900 MHz authorizations [that] had been filed subsequent to the release of the [800 MHz Order].[50]

Since then, the FCC has acted on a number of those applications. Some were returned with requests for additional information relating to the applicant's eligibility and asserted loading. Some presumably were granted. ACI 900, Inc., a Nextel subsidiary that submitted a significant number of applications across the nation, has voluntarily withdrawn approximately half of its filings. The rest remain pending. Applications from other parties still may be on file as well.

The auction process will work most effectively and will achieve optimal results if the FCC completes its processing of applications filed prior to adoption of the freeze. The applications all should be reviewed under the same legal standard. Those that are consistent with the licensing policies at the time of their submission should be granted. Those that are not should be dismissed.

E. Treatment Of Incumbent Systems.

Although many aspects of 800 MHz and 900 MHz operations are subject to the same rules, the regulations governing the two bands are not identical in all respects. One

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49 *Notice* at ¶ 64.

50 *Id*.

of those differences was eliminated in the 800 MHz Order when the FCC authorized the conversion of 900 MHz B/ILT spectrum to commercial status. However, there still are distinctions that do not have any identified policy or technical rationale, but merely reflect that rules governing the different bands were adopted at different times. Now that the 900 MHz band is expected "…to provide the 'green space' necessary to effect reconfiguration of the 800 MHz band, [and] some operations may need to shift from the 800 MHz to 900 MHz band…"[51] any differences should be eliminated unless necessary for an identified purpose.

In particular, the Commission should take this opportunity to modify its rules so that incumbent 900 MHz site-based stations, like their 800 MHz counterparts, are permitted to modify or add sites within the 22 dBμ/V contours.[52] The current rules restrict 900 MHz site-based SMR licensees to modifications within their 40 dBμ/V contour.[53] The Commission has never identified a reason for denying 900 MHz incumbents the flexibility enjoyed by similarly situated 800 MHz licensees and should correct that difference in this proceeding. It also should clarify that the contour is calculated based on the maximum permissible ERP for the site, as already is clear for 800 MHz site-based facilities.[54] Both provisions also should be addressed in a modified version of the unnumbered proposed Rule Section on p. 34 of the *Notice* identified as "Grandfathering provisions for incumbent licensees."

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51 *Notice* at ¶ 8.

52 47 C.F.R. § 90.693(a).

53 47 C.F.R. § 90.667(a). Once geographic licenses are issued on the B/ILT channels, site-based incumbents will be subject to a contour limitation as well.

54 47 C.F.R. § 90.621(b)(6).

The proposed changes offered by the Joint Parties will not alter the co-channel protection standard under FCC Rule Section 90.621(b), which already is premised on protecting the 40 dBμ/V service contour of both 800 MHz and 900 MHz facilities based on their maximum permissible ERP. Neither will these recommendations expand the service contour that geographic licensees will be required to protect which still will be the incumbent's 40 dBμ/V contour calculated using the maximum permissible ERP for the station. These changes will, however, further the Commission's intention to "provide greater flexibility in deploying the spectrum to respond to evolving market demands."[55]

VI. CONCLUSION.

The 900 MHz band is an important resource for the sophisticated mission critical communications systems that serve the public interest well. While the FCC should explore ways to improve the efficient use of spectrum, it must consider the spectrum needs of all users and radio services. The Commission can better balance the needs of commercial operators and incumbent private wireless users by: 1) reserving a portion of the 900 MHz B/ILT channels for continued site-specific licensing to qualified eligible

[55] *Notice* at ¶ 1.

users; 2) increase the level of interference protection to 900 MHz incumbents to avoid a repeat of the disastrous interference environment that exists at 800 MHz; and 3) provide incumbent licensees with greater flexibility to modify grandfathered facilities.

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